

**SPIDER SPECIES *Heteropoda venatoria* Linnaeus 1767  
(Family: Sparassidae): A COMMONLY USED  
TRADITIONAL MEDICINE OF  
CHAR CHAPORI PEOPLE OF ASSAM, INDIA.**

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**ABSTRACT**

The use of animal for medicinal purpose is a part of traditional knowledge that is increasingly more relevant in conservation biology, public health policies, sustainable management of natural resources, bio-prospecting and patents. Scientific research on ethno-biology and ethno-medicine has made important contributions to understanding the traditional subsistence and medical knowledge and practices. In India, the traditional knowledge system is fast eroding due to urbanization and destruction of traditional biodiversity. The key reason for the erosion of ethno-zoological knowledge is the demise of elderly people without transmitting their valuable knowledge to the younger generation. The uses of spiders in traditional medicines are very little documented. The present study clearly shown the common use of a spider ( *Heteropoda venatoria* ) in traditional medicine of char Chapori people of Assam in northeast India for treatment of ulcer, asthma and menstrual over bleeding (Menorrhagia). Further more, the present study has reported first time the use of skin shed of spider species *Heteropoda venatoria* for treatment of menstrual over-bleeding. Detail use of spider in treatment of ulcer and asthma is also reported for the first time from Northeast India. Thus, further studies are required to confirm the presence of bio-active compounds in these traditional medicines.

**Key Words:** *Heteropoda venatoria* , skin shed, Menorrhagia, Char chapori people, Assam

**INTRODUCTION**

The use of animals for medicinal purpose is a part of traditional knowledge that increasingly more relevant in conservation biology, public health policies, sustainable management of natural resources, bio-prospecting and patents (Alves and Rosa, 2007). Again, the use of plants and animals in traditional medicine by indigenous peoples across the globe is a well documented practice since historical times. Ingredients derived from wild plants and animals are not only used in traditional medicines, but also increasingly valued substances as a raw materials

during the preparation of modern medicines and herbal preparations (Kang and Phipps, 2003). Although, the plants and plant derived materials constitute the primary source of ingredients for traditional medicine, the identification of animal resources for medical cures is also important. Wild and domestic animals and their by products, (e.g., hooves, skins, bones, feathers, tusks) form important ingredients in the preparation of curative, protective and preventive medicine (Adeola, 1992). For example, honey is used to cure cough and cold and eye disease (Mhawar and Jaroli, 2007). Fresh blood of pigeon is used to treat paralysis (Gupta *et al.*, 2003; Solovan *et al.*, 2004). Crab (*Cancer pararus*) is used to treat cough, asthma, Tuberculosis etc. by tribes of Nagaland (Jamir & Lal, 2005). Snail is used to cure weakness (Jamir & Lal, 2005). Hard shell turtle is used to cure burn, asthma, Tuberculosis (Gupta *et al.*, 2003; Mahawar and Jaroli, 2006). In Hindu religion, five products (milk, urine, dung, curd and ghee) of cow is used for purification purpose since ancient times (Mahawar and Jaroli, 2006). The healing of human ailments by using therapeutics based medicines obtained from animals or animal derivatives are known as zoo-therapy. Animal based medicines could be prepared from the entire animal, from parts of the animal's body, from products of its metabolism or from other materials related to animals (nests, cocoons etc.) (Costa Neto, 2005). The traditional medicines that have been prepared from whole animals or animal derivatives of almost all taxonomic groups Viz., arthropods, echinoderms, amphibians, reptiles, birds and mammals are well-known (Oudhia, 1995; Mhawar and Jaroli, 2008; Alves, 2009). Scientific research on ethno-biology and ethno-medicine has made important contributions to understanding the traditional subsistence and medical knowledge and practices (Pieroni *et al.*, 2005).

In India, the traditional knowledge system is fast eroding due to urbanization (Mhawar and Jaroli, 2008) and destruction of traditional biodiversity. In fact, the majorities of the traditional healers are on or above the age of 60s and the young generations are not interested in traditional medicine. The key reason for the erosion of ethno-zoological knowledge is the demise of elderly people without transmitting their valuable knowledge to the younger generation (Lohani *et al.*, 2008). Thus, there is an urgent need to inventories and record of all the ethno-biological information amongst different ethnic communities prior to complete loss of traditional cultures from the society (Mhawar and Jaroli, 2006). Various works have been done on Zoo-therapy by various workers in different parts of the world. For example, in traditional Chinese medicine, more than 1500 animal species have been recorded to be of medicinal use (Alves and Rosa, 2005). In Bahia state of northeast Brazil, over 180 therapeutic animals have been recorded (Costa Neto, 2004). In India, nearly 15-20 percent Ayurvedic medicine is based on animal derived substances (Oudhia, 1995). Again, the use of arthropods in traditional medicine is wide spread. In India, over 500 species of insects, mites and spiders have been reported as useful to medicine to cure common and complicated ailments. In northeast Brazil, the use of insects is common in medicinal use (represented 14% of the listed medicinal animals in the region) for asthma, pneumonia, sinusitis and

coughs (Alves, 2009). In addition, common use of spiders by human through keeping tarantulas as pets for their consumption as regular food items (Machkour *et al.*, 2011). In Cambodia, people used fried tarantulas as food (the species *Heplopelma albostriatum*, Aranea, Theraphosidae; Simon, 1886). The Piaroa Indians of Amazon eat the Goliath bird eating tarantula (*Theraphosa blondi*) to become a better hunter (Machkour *et al.*, 2011). The uses of spiders in traditional medicines are very little documented. Oudhia (1995) is the pioneer worker in this regards in India. In Brazil, Costa-Neto (2006) has reported the use of Chelicerates from the Goliath bird eating tarantula to treat erysipetals (or Holy fire), fortification of teeth and Asthma. The use of toasted bird spider (referred as *Mygalomorphs spp.*) was reported in Bahia state of Brazil (Costa-Neto, 2004). In Chiapas, Tzotziles and Tzetzales ethnic groups used a big spider in their medicine (Machkour *et al.*, 2011). Hunn (1977) described the use of a tarantula in Chiapas (Mexico) to treat tumours, in this regards, the patient being bitten in the affected zone. For the first time, Machkour *et al.* (2011) described the traditional use of Tarantula *Brachypelma vagans* by traditional healer in the Chol Mayan ethnic group in Mexico.

The use of spider in wound healing was reported by various workers but no workers mentioned what types of spider species are used for wound healing in detailed except Machkour *et al.* (2011). The use of the spider genus *Heteropoda* in traditional medicine has been studied in present works.

The main objective of the study was to know, how do the spider *Heteropoda venatoria* is used in traditional medicine by the char Chapori people of Assam. What types of ailments such medicines is used and what is the mode of preparation of such traditional medicine. The study also includes whether people popularly using such medicine or any toxicity is observed during the use of such medicine.

### **Characters of the Genus *Heteropoda***

The genus *Heteropoda* (Araneomorphae: Sparassidae) is characterized by the carapace nearly as long as wide, upper surface nearly flat or in some very high posteriorly, cephalic part slightly depressed in front. Posterior row of eyes re-curved, the lateral eyes larger and prominent, eyes of anterior row straight or a little pro curved; anterior lateral larger than median. Ocular quadrangle longer than wide, narrow in front. Maxillae plain, not crested. Epigyne provided with a pair of lobes usually separated by a median septum. A total of 37 species are reported from India so far (Keswani *et al.*, 2012).

*Heteropoda venatoria*, commonly known as common house spider. Male is generally 20-25 mm length and female is 25-30 mm length in size. It is most common spider inside houses and occasionally on tree trunks in gardens. Gravid females carry the white disc- shaped egg sac under the body with the help of palps.

*Heteropoda venatoria* is very common spider in houses of Assam. The shaded skin or exoskeleton of the spider is found commonly under the roof of houses, cow sheds, kitchen hanging with the help of silk. The shaded skin or exoskeleton of the spider is generally used in different treatments.

#### **Char -Chapori people of Assam**

The Char-Chapori people of Assam are inhabitants throughout the Brahmaputra valley of Assam, India. Most of them are immigrants of east Bengal during early twenty century. They comprise mainly Muslim, Bengali Hindu and Nepali People. The key livelihood of the people is agriculture Viz., paddy, jute and various vegetables etc. They are economically very poor and most of them are illiterate. Most of them experiences heavy flood of river Brahmaputra almost every year. The communication system of the people is also very miserable. They depend mainly on traditional healer for treatment of ailments. The senior persons of the community often use traditional knowledge in medicine for treatment of various diseases. Some of them are known as **Kobiraj** and they professionally use these traditional medicines for treatment of other people. Although, all char Chapori people do not use traditional medicine for treatment of various diseases but, some people who either do practice on traditional medicine or provide free medicine to other people learned such folk knowledge traditionally generation after generation.

### **STUDY AREA AND METHODS**

#### **Study area**

The study area is located in the Brahmaputra valley char Chapori areas of Assam in Northeastern India. Study includes a total of five study locations viz., (1) Punioni and (2) Kachokoni village of Sonitpur district (Coordinates: 26°32' – 27°02' N to 92°25' – 93°47' E). The inhabitants are mainly Muslim and Adivasi people, located on the north of Tezpur, the station head quarter of Sonitpur district, (3) Mohmara village of Morigaon district (Coordinate: 26°15' – 26°50' N to 92° to 95°30' E), the inhabitants are mainly Muslim, (4) Tilapara village of Dhubri district (Coordinates: 25°20' – 26°25' N to 89°34' to 90°25' E) which is located on the bank of river Brahmaputra and the inhabitants are Muslim, Bengali Hindu and Adivasi, and (5) Chunari of Goalpara district (Coordinates: 25°50' – 26°10' N to 90° to 91°15' E) which is located on the Southern bank of River Brahmaputra and contained mix population of Muslim, Adivasi, Bengali Hindu and Nepali (Figure 1)

#### **Data Collection**

In order to recognize the use of genus *Heteropoda* in traditional medicine, we interviewed the medicine men, patients and some other people in four districts of Assam. The interviewed group of people consists of people of the age group of more than 60years, 50-60 years, 30-40 years and women folk of the same age group of the five villages of aforesaid districts. To interview the medicine man in each of the villages, questionnaires have been prepared to understand the practice

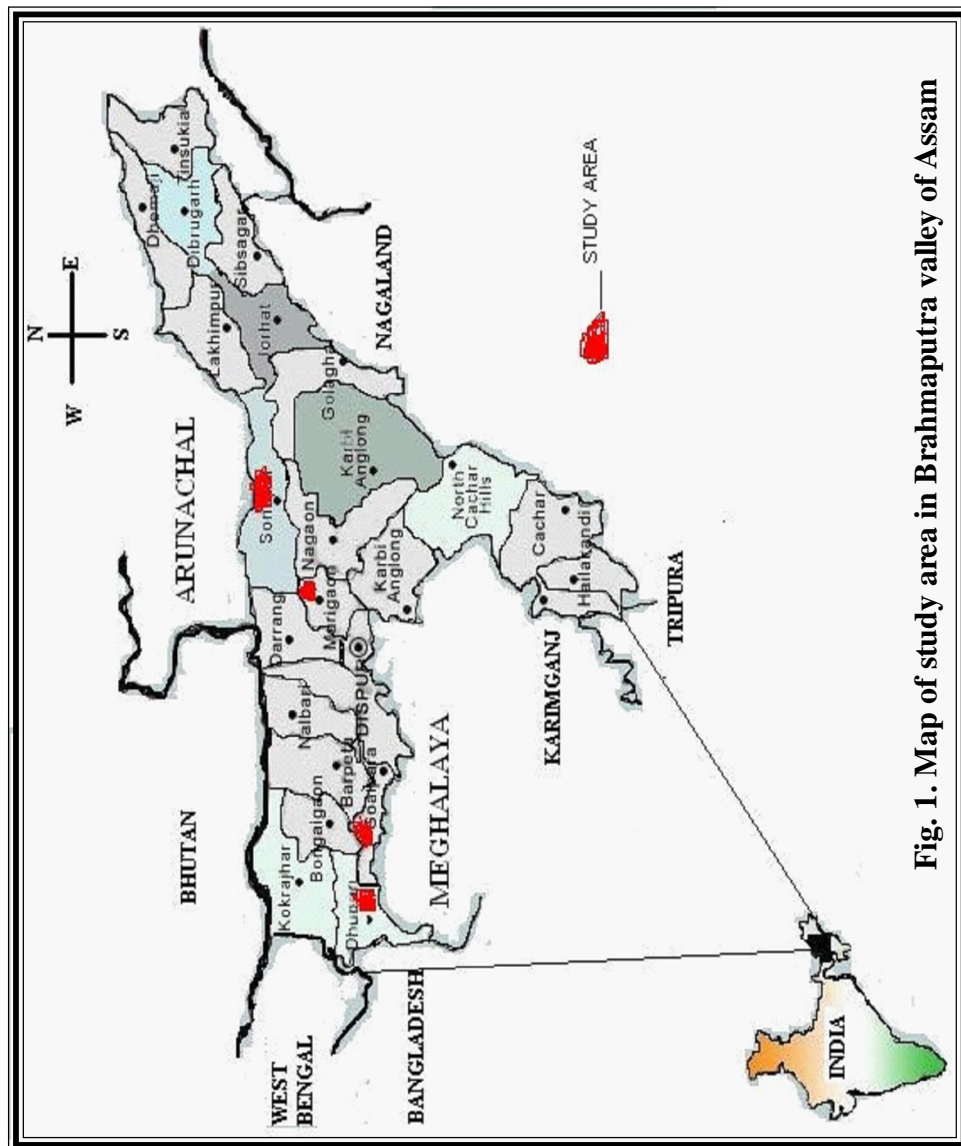


Fig. 1. Map of study area in Brahmaputra valley of Assam

of *Heteropoda* use (Table-1). Again we tried to interviewed the village people to obtained their opinion about traditional use of *Heteropoda* spiders as their traditional medicines. We interviewed altogether 26 people from the five villages. Selection of people was random and based on questions whether they know the use of spider in traditional medicine or not.

## RESULTS

Altogether 26 medicine men were interviewed and found that, all were known to use the *Heteropoda* species for treatment of ulcer symptoms. Amongst all the 26 people interviewed during the process, 21 people have knowledge to used the spiders for treatment of asthma. Seven people know treatment of Menorrhagia (excessive bleeding during menstruation) using the studied species

(Tabl-1). Of the total 26 interviewed medicine men, 22 were in the age group of 60-75 years, 3 were in age group of 45-60 years, and 1 was in the age group of 30-40 years .

The shed skin of spider *Heteropoda venatoria* was used to cure skin diseases, ulcer, ring worm, fungal infection, asthma and menstrual disorder etc. Medicine men also informed that, the larger spider found in their houses were used for treatment of various ailments and Mr. Indrajit Das, a interviewed medicine man has displayed the skin shed of spider that has been used as medicine that has later identified as *Heteropoda venatoria* (Fig.2).

#### **Practice for treatment of Skin diseases**

The process of medicine preparation from the spider to treatment of ulcer and skin diseases like ring worm, the medicine man collect a shed skin of spider *Heteropoda* from their house wall or roofs and burns to make ash and mixed with other ingredients (Table 2) and thus made a paste that was applied to the infected skin for minimum of three to four days.

#### **Practice for treatment of Asthma**

For treatment of Asthma, the medicine men used more than one shed skin of *Heteropoda* spider along with other ingredients (Table2). They made a paste using the process of mixing and grinding of 2-3 shed skin of spider *Heteropoda* with 2-3 pieces of cloves, 2-3 numbers of black pepper and 5-7gms of ginger and then fed them to patient @ 1 dose/day for 3 days. About 77% (20 out of 26) interviewed medicine men informed to use of shed skin of spider species *Heteropoda* for treatment of asthma with variation in use of amount of ingredients.

#### **Practice for treatment of Menorrhagia**

Menorrhagia is a female reproductive disease in which the excessive or heavy menstrual bleeding has taken place. The probable causes of menorrhagia includes uterine fibroids, (benign tumours of smooth muscle tissue), endometrial polyps (tiny benign growths that protrude into the womb), adenomyosis, hypothyroidism, an auto immune disease called systemic lupus erythematosus, blood clotting disorders such as inherited bleeding disorders. For the treatment of Menorrhagia (excessive bleeding during menstruation), the medicine men used a shed skin of spider and mixed with betel nut in such a manner that, the shed skin of spider could not be recognized by the patient. After mixed out all the ingredient, the patients were asked to consume the medicine. The medicine men claimed that the patient recovered from the disease within an hour of consumed the medicine. During present study, all the seven reported medicine men claimed that, the medicine prepared from skin shed of spider *Heteropoda* could completely cure Menorrhagia. Altogether eight out of 11 interviewed women patients admitted that, they got completely cured from the disease after the use of *Heteropoda* medicine. However, they did not know about the constituents of the medicine.

It was found that, all the medicine men used the skin shed of spider *Heteropoda venatoria*. However, 46% of medicine men also used spider silk along with the skin shed of spider *Heteropoda venatoria* for treatment of Ulcer. Survey also found that, medicine men never used live spider as medicine. They believed that, the live spider was venomous. 23% medicine men believed that, the live spider of *Heteropoda venatoria* if sucked the juice from uncovered ulcer of the patient at night hours, the ulcer would not be cured easily owing to no response by any other medicines. Again, 38% medicine men believed that, the *Heteropoda* may bite on head during night hours and injected venom in it and thus leading to baldness of the patient.

The use of spider in wound healing, asthma, treatment of tumours, heart disease, muscular dystrophy are also well documented in the present study (Table -3). However, it was not informed what type of the spider species were used for various ailments. During the present interrogation, a total of 120 patients and common people were asked about the efficiency and the use of such medicine but, most of the common people informed that, they did not rely on such medicine.

## DISCUSSION

Many specialists considered spiders as dangerous animal (Isbister *et al.*, 2005), however, only few species are really dangerous for humans (Vetter and Isbister, 2008). Unlike other arthropods, the spider species rarely transmit communicable diseases and play a critical role in the ecosystem by controlling the vector arthropods that frequently transmitted human diseases, such as mosquitoes and flies (Diaz, 2004; Hadole and Vankhede, 2012). In general, the Spiders are associated in many areas as medical practice (Wright, 1983). The species *Heteropoda venatoria* (Huntsman spider) is not a danger spider, but a locally painful bite may be delivered to any human being who have carelessly handles a huntsman spider (Diaz, 2004). Majority of Char – Chapori's people of Assam believed that, the live *Heteropoda* spider is a poisonous animal that can suck fluid from uncovered ulcers and such ulcers are not cured easily. (Indrajit Das, a Herbalist from the study area). In India, Oudhia (1995) initially reported the use of spider in traditional medicine. Use of spider in Brazil, Cambodia, Mexico are well documented (Alves and Ross, 2004, 2005; Costa-Neto, 2005) but, in India, this type of report is very scarce. Machkour-M'Rabet *et al.* (2011) was the pioneer for the documentation of the use of Tarantula spider -*Brachypelma vagans* in traditional medicine of the Chol Mayan ethnic group of Mexico. The use of spider in wound healing (Alves and Rosa, 2005) and Asthma are also well documented from Brazil, India, Mexico and China. The review works of the use of spiders by various ethno-linguistic groups are also using spider as a traditional medicine (Table-3). The present study is described in details about the methods of using *Heteropoda venatoria* for the treatment of Ulcer, Asthma and Menorrhagia (excessive menstrual bleeding) in

**Table 1 Synthesis of the 26 interviewed Medicine men in five villages of the study area.**

Queries	Respondents
What is the educational qualification of medicine men? Whether they have passed School level education at least up to class six/ below class six or completely uneducated?	80% were uneducated (n=21), 8% have passed up to class iv (n =2) and 12% have passed up to Class vi (n=3)
From where the medicine <i>men</i> have learned the use of wild Spider as a traditional medicine?	73% medicine men were learned from their parent traditionally (n=19), 15% from village elderly(old aged people)people in their own locality (n=4) and 12% were learned from the Guru (n=3)
Do the medicine men use live spider as medicine?	Only 12% (n=3) use live spider and 88% (n=23) medicine men were not used live spider.
Do they know about any negative effect of natural spider?	100% medicine men know about the negative effects of live spider; 73% believed that, if the spider bite on head man becomes bald and if sucked ulcers it never cured. 50% medicine men have superstitious belief (n=13).
Do they use spider web (silk) in any other medicine or not?	46% (n=12) medicine men use web as treatment of ulcer; 54% (n=14) were not use spider web.
For treatment of Which ailment they are using spider?	For 100% (n=26) medicine men use spider for treatment of ulcer. 77% (n=20)use spider as treatment of asthma; 27%(n=7) medicine men use spider for treatment of Menorrhagia
How do they identify the spider <i>Heteropoda</i> ?	100% (n=26) medicine men identify the spider based on body size.
Why do they not use other species of spiders for treatment?	Medicine men do not know about this question.



**Table 2** The use of spider genus *Heteropoda* for the treatment of various ailments, mode of practice and its application procedures.

Type of Ailment	Mode of medicine preparation	Application types
a. Ulcer	<p>a. Ash grinded of a single skin shed of spider <i>Heteropoda</i> + coconut oil 10ml (approx.) and mixed properly.</p> <p>b. Ash grinded of a spider web (silk) + diary cream to made a paste</p> <p>c. Ash grinded of a single skin shed of <i>Heteropoda</i> + ash of spider web(silk) + coconut oil and made a paste</p>	<p>Apply the medicine 2 – 3 times a day for three days.</p> <p>Apply 2 -3 times a day for 3 -4 days.</p> <p>Apply 2-3 times a day for 3 -4 days.</p>
b. Asthma	<p>a. Skin shed of spider <i>Heteropoda</i> 2½ + Clove 2½ + Black pepper 2½ + gingers 5gm grind together.</p>	<p>fed the medicine almost daily for three consecutive days.</p>
c. Menorrhagia (excessive menstrual bleeding)	<p>a. A single skin shed of spider <i>Heteropoda</i> sp. along with a betel leaf (Pan) was used as medicine.</p>	<p>Consumed the medicine by the patient once in a day for two days</p>

**Table 3 Use of spider for curing of various diseases by different ethno-linguistic groups across the globe.**

Ethno-linguistic groups/location	Sources	Uses
<b>Brazil</b>		
Northeastern Brazil	11	Hair of bird eating spider (Theraphosidae) used in magic rituals.
Bahia state of Brazil	9	Chelicerates from the Goliath bird eating Tarantula used to treat Erysepalis (or Holy fire), fortification of teeth and asthma.
Brazil	15	Unidentified species eaten as aphrodisiacs
Yamonamo(Venezuela)	15	Theraphosa leblondi (theraphosidea) tarantulas eaten
<b>Africa</b>		
San(South Africa)	15	Spider eaten. No details
Maniana (Gambia)	15	Spider eaten. No details
Merina (Madagascar)	15	Nephila madagascariensis eaten fried in oil or fat.
Cameroon (W Africa)	15	Unidentified species provide divination in legal cases.
Azande (Central Africa)	15	Unidentified species manipulated in curing rites.
<b>Austraasia/ Pacific</b>		
Amiyenggal, larrakia, Malak Malak, Wadjigiyn, Werat, Wulna (N Australia)	15	Web of <i>Nephila</i> used as ligature to sever finger joint of young females, in at least some cases in accordance with mythical prescription
Ngarinman (NW Australia)	15	Web of unidentified species used to make purse
Pawaia (Eastern Highlands, Papua New Guinea)	15	Unidentified species roasted and eaten by children
Maring (Westrn highlands , Papua New Guinea)	15	Various Unidentified species including <i>Nephila</i> sp. Roasted and eaten, mostly by children
Yopno (Morobe Province, Papua New Guinea)	15	Unidentified species roasted and eaten by children
Kilimeri (West Sepik, Papua New Guinea)	15	Funnel web spiders(?) roasted and eaten by women
Malokula (Vanuatu)	15	Web used to construct ritual masks
New Caledonia	15	Araneus edulis eaten grfilled on coals
<b>America</b>		
Tzeltal (Chiapas, Mexico)	16	Tarantulas (Mygalomorphae) used in cure for tumours
Chol-Mayan ethnic group of Mexico	27	Tarantula Brachypelma vagans based vebeverage is used to cure chest pain, coughing and asthma.
Guaharibos, Piaroa(Paraguay)	15	Tarantulas eaten

Ethno-linguistic groups/location	Sources	Uses
<b>Europe</b>		
France, Germany	15	Unidentified species eaten
England	15	Unidentified species used to relief fever
Calabria(Southern Italy)	37	Unidentified species is used to cure quatrain fevers (Malaria)
<b>Asia</b>		
Central Nepal	25	Web of Araneas species is applied to fresh wound to stop bleeding
Thailand	15	Egg bags of spiders eaten
Khmer (Cambodia)	15	Tarantulas(Theraphosidae)eaten deep fried
Nuauulu(Seram, Indonesia)	15	Web of Nephila used as fishing lure
Kamchatka (East Russia)	15	Unidentified species eaten by women to enhance fertility, ease labor
<b>India</b>		
South India	13	Web of spider Tageneria gigantea with honey for treatment of Aphrodisiac, Muscular dystrophy like symptoms.
In Homeopathic medicine	43	Spider Tarantula is used for treatment of heart problems, ailments affecting women's
Chattishgarh	32	Web of unidentified species used to treat wound healing.



A. *Heteropoda venatoria*



C. Skin shed of *Heteropoda venatoria*



B. A medicine man

*Heteropoda venatoria* in traditional medicine.....Mansur Ahmed *et al.*

Assam. The use of *Heteropoda venatoria* was also well documented in the present study for the treatment of Menorrhagia.

Most of the people thought that, the use of spiders and spider products may be toxic or may be contaminated with harmful pathogen and effect the human being. The report of use of spider to treat the asthma like disease is available through the world but, many examples are also found to provoke asthma owing to enter the spider hair into the lung through inhalation process during consumption of spider (Diaz, 2004; Battist *et al.*, 2011). The most likely hypothesis to explain the role of exoskeleton of *Heteropoda* in the asthma reaction is the action of chitin particles exists with the medicine (Battist *et al.*, 2011; Ober and Chupp, 2009).

However, the present generation is very ignorant about the conservation of traditional knowledge of medicine. In fact, the majority of the traditional healers are on or above the age of 60 and the young generations are not interested in traditional medicine. The key reason for the erosion of ethno-zoological knowledge is the demise of elderly people without transmitting their valuable knowledge to the younger generation. Thus, it is very important to conserve, discover and documentation of such traditional knowledge as there is a tremendous possibility to find out the other most essential medicine like anticancer drug and as well drugs for AIDS etc.

It is a well known fact that, the insects are very important sources of drugs for modern medicine since they have immunological, analgesic, antibacterial, diuretic, anaesthetic and anti rheumatic properties (Yamakawa, 1998). Kunin and Lawton (1996) also suggested that, the promising anti cancer drugs have been isolated from the wings of Asian Sulphur Butterflies and from legs of Taiwanese stag beetles. Oldfield (1989) has also recorded that, about 4% of the extracts prepared in 1970's from 800 species of terrestrial arthropods showed some anticancer activity. Toxin Hp Tx2 from the venom of spider *Heteropoda venatoria* was extracted by Sanguinetti *et al.*, (1997) that blocks the voltage gated Potassium Channel Kv 4.2. This peptide is organised around the ICK structural motif and it presents a strong electrostatic anisotropy. Thus, there is a possibility in having active compound in shed skin of spider cuticle which could reduce the over bleeding during menstruation or the spider cuticle might have some active compound which could helped in blood clotting or may have anti-cancer activity (Table-3).

## CONCLUSION

The present study clearly showed the common use of a spider *Heteropoda venatoria* in traditional medicine of char Chapori people of Assam, to treat the ulcer, asthma and menstrual over bleeding (Menorrhagia). Again, the use of skin shed of *Heteropoda venatoria* to treat the menstrual over-bleeding is the first report

June, 2013, Indian Journal of Arachnology, 2(1).....12

across the globe that has been discovered in the present study area. The human culture has negative attitudes towards the spider species, so the positive thinking should be highlighted to conserve the species for human welfare across the country. Further studies on the *Heteropoda venatoria* and other spiders are urgently required to confirm the existence of bio-active compounds in this traditional medicines.

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*Heteropoda venatoria* in traditional medicine.....Mansur Ahmed *et al.*

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*Heteropoda venatoria* in traditional medicine.....Mansur Ahmed *et al.*

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